

## CLAIMS

We claim:

- 5           1.     A composition comprising a purified DNA having an oligonucleotide sequence selected from the group consisting of SEQ ID NO:44, and SEQ ID NO:49.
2.     RNA transcribed from the DNA of Claim 1.
- 10        3.     Protein translated from the RNA of Claim 2.
4.     Antibodies produced from the protein of Claim 3.
5.     A vector comprising the DNA of Claim 1.
- 15        6.     A host cell comprising the vector of Claim 5.
7.     The host cell of Claim 6, wherein said host cell is *E. coli*.
- 20        8.     The host cell of Claim 6, wherein said host cell is *R. sphaeroides*.
9.     The host cell of Claim 6, wherein said host cell is *A. thaliana*.
10.    Transgenic plants comprising the vector of Claim 5.
- 25        11.    A composition comprising a purified DNA encoding a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:45 and SEQ ID NO:50.
12.    RNA transcribed from the DNA of Claim 11.
- 30        13.    Protein translated from the RNA of Claim 12.

14. Antibodies produced from the protein of Claim 13.
15. A vector comprising the DNA of Claim 11.
- 5 16. A host cell comprising the vector of Claim 5.
17. The host cell of Claim 16, wherein said host cell is *E. coli*.
- 10 18. The host cell of Claim 16, wherein said host cell is *R. sphaeroides*.
19. The host cell of Claim 16, wherein said host cell is *A. thaliana*.
20. Transgenic plants comprising the vector of Claim 15.
- 15 21. A purified nucleic acid that specifically hybridizes to the complement of a sequence selected from the group consisting of SEQ ID NO:44, and SEQ ID NO:49, under highly stringent conditions in 5X SSPE, 1% SDS, 5X Denhardt's reagent and 100 µg/ml denatured salmon sperm DNA at 68°C overnight, followed by washing in a solution comprising
- 20 0.1X SSPE and 0.1% SDS at 68°C, wherein said nucleic acid encodes a protein with DGTS synthetic activity.
22. A vector comprising the nucleic acid of Claim 21.
- 25 23. A host cell comprising the vector of Claim 22.
24. A transgenic plant comprising the vector of Claim 22.
25. A protein encoded by the nucleic acid of Claim 21.

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26. A purified nucleic acid comprising a sequence that is at least 95% identical to SEQ ID NO:44, or a sequence that is at least 95% identical to SEQ ID NO:49, wherein said sequence encodes a protein with DGTS synthetic activity.

5 27. A vector comprising the nucleic acid of Claim 26.

28. A host cell comprising the vector of Claim 27.

29. A transgenic plant comprising the vector of Claim 27.

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30. A protein encoded by the nucleic acid of Claim 26.